

WHAT IS CLAIMED IS:

1. A radiopaque implantable biomaterial (5) device, comprising:
a collagenous biomaterial (10) having a biotropic agent (11),
the biotropic agent (11) comprising at least one of a proteoglycan, growth
5 factor, glycoprotein, and glycosaminoglycan disposed thereon; and
a radiopaque marker (16) disposed on the collagenous
biomaterial (10).
2. The implantable biomaterial device (5) of claim 1, wherein the
collagenous biomaterial (10) comprises tissue submucosa.
- 10 3. The implantable biomaterial device (5) of claim 2, wherein the tissue
submucosa (10) comprises at least one of a porcine, bovine, and ovine
submucosa.
4. The implantable biomaterial device (5) of claim 3, wherein the tissue
submucosa (10) further comprises the submucosa from at least one of an
15 alimentary, genital, urinary, respiratory, and integumentary submucosa.
5. The implantable biomaterial device (5) of claim 1, further comprising a
pharmacologic agent (22) disposed on the collagenous biomaterial (10).
6. The implantable biomaterial device (5) of claim 1, wherein the
radiopaque marker (16) further comprises at least one of tantalum,
20 barium, iodine, and bismuth, and a derivative thereof.
7. The implantable biomaterial device (5) of claim 1, wherein the
radiopaque marker (16) is disposed on a serosal side (18) of a tissue
submucosa (10).
8. The implantable biomaterial device (5) of claim 7, wherein the
25 radiopaque marker (16) comprises tantalum.

9. The implantable biomaterial device (5) of claim 1, wherein the radiopaque marker (16) comprises at least one of barium sulphate, iodine, and bismuth oxychloride (16).

5 10. The implantable biomaterial device (5) of claim 1, wherein the radiopaque marker (16) is disposed on a tissue submucosa (10).

11. The implantable biomaterial device (5) of claim 10, wherein the tissue submucosa (10) comprises a warm blooded vertebrate submucosa.

10 12. The implantable biomaterial device (5) of claim 11, wherein the tissue submucosa (10) comprises warm blooded vertebrate submucosa from at least one of an alimentary, genital, urinary, respiratory, and integumentary submucosa.

13. The implantable biomaterial device (5) of claim 1, wherein the collagenous biomaterial (10) comprises a collagenous biocompatible biomaterial.

15 14. The implantable biomaterial device (5) of claim 13, wherein the radiomarker (16) comprises tantalum powder and the collagenous biomaterial (10) comprises a warm blooded vertebrate submucosa from at least one of an alimentary, genital, urinary, respiratory, and integumentary submucosa.

20 15. The implantable biomaterial device (5) of claim 14, wherein the biomaterial (10) has at least one of coiled, helical, spring-like, randomized, branched, sheet-like, tubular, spherical, and fragmented shape (13).

25 16. The implantable biomaterial device (5) of claim 15, wherein the biomaterial (10) comprises at least one of a fluidized, comminuted, liquefied, suspended, gel-like, injectable, powdered, ground, sheared, and solid shape (13).

17. The implantable biomaterial device (5) of claim 16, further comprising an injectable (13), coiled (13), biocompatible collagenous

biomaterial (10) having a tantalum powder radiopaque marker (16) disposed thereon.

18. The implantable biomaterial device (5) of claim 1, wherein the device comprises at least one of coiled, helical, spring-like, randomized,
5 branched, sheet-like, tubular, spherical, and fragmented shape (13).

19. A radiopaque implantable biomaterial device (5), comprising:
a warm blooded vertebrate tissue submucosa (10); and
a radiopaque marker (16) disposed on the tissue submucosa
(10).

10 20. The implantable biomaterial device (5) of claim 19, wherein the warm blooded vertebrate submucosa (10) comprises at least one of bovine, porcine, and ovine submucosa (10).

21. The implantable biomaterial device (5) of claim 20, wherein the tissue submucosa (10) further comprises the submucosa (10) from at
15 least one of an alimentary, genital, urinary, respiratory, and integumentary submucosa (10).

22. The implantable biomaterial device (5) of claim 21, wherein the tissue submucosa (10) further comprises a pharmacologic agent (22) disposed on the tissue submucosa (10).

20 23. The implantable biomaterial device (5) of claim 19, wherein the radiopaque marker (16) comprises at least one of tantalum, barium, iodine, and bismuth, and derivative thereof.

24. The implantable biomaterial device (5) of claim 23, wherein the radiopaque marker (16) comprises tantalum powder.

25 25. The implantable biomaterial device (5) of claim 23, wherein the radiopaque marker (16) comprises at least one of barium sulphate, iodine, and bismuth oxychloride.

26. The implantable biomaterial device (5) of claim 19, further comprising a porcine alimentary submucosa (12) including a tantalum powder radiopaque marker (16) disposed thereon.

27. The implantable biomaterial device (5) of claim 19, wherein the device has at least one of a coiled, helical, spring-like, randomized, branched, sheet-like, tubular, spherical, and fragmented shape (13).

28. The implantable biomaterial device (5) of claim 19 wherein the material comprises at least one of in the shape (13) of fluidized, comminuted, liquefied, suspended, gel-like, injectable, powdered, ground, sheared, and solid.

29. The implantable biomaterial device (5) of claim 19, wherein the device comprises a biocompatible tissue submucosa (10).

30. The implantable biomaterial device (5) of claim 29, wherein the device has an endotoxin level less than 12 endotoxin units per gram.

31. The implantable biomaterial device (5) of claim 19, wherein the device further comprises:

porcine tissue submucosa (10);

a tantalum radiopaque marker (16) disposed on the submucosa (10); and

having an endotoxin level less than 12 endotoxin units per gram.

32. A radiopaque implantable biomaterial device (5), comprising:

a warm blooded vertebrate submucosa (10) from at least one of an alimentary, genital, urinary, respiratory, and integumentary submucosa;

the submucosa (10) shaped into a coil (28); and

a tantalum powder radiopaque marker (16) disposed on the submucosa (10).

33. The implantable biomaterial device (5) of claim 32, wherein the device comprises a biocompatible submucosa (10).

34. The implantable biomaterial device (5) of claim 33, wherein the device has an endotoxin level less than 12 endotoxin units per gram.

- 5 35. The implantable biomaterial device (5) of claim 34, wherein the device comprises a pharmacologic agent (22) disposed on the submucosa (10).

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